Notice of Allowability	Application No.	Applicant(s)	
	09/803,249	WILLIS ET AL.	
	Examiner	Art Unit	
	Amr Awad	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Examiner amendment autharized by the Applicant's representative on 9/21/2005*.

2. ☒ The allowed claim(s) is/are *1-5 and 7-25*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Applicant's representative Christine Johnson (Reg. NO. 38,507) on September 16, 2005.

The application has been amended as follows:

Please amend the claims as follows:

Claim 1 (currently amended). A method for reducing sparkle artifacts due to non linearity in a transfer function of a liquid crystal imager ~~,—~~ comprising the steps of:

decomposing an input video signal according to a first threshold to provide a first low brightness signal;

low pass filtering ~~only a~~ said first lower ~~brightness level~~ signal ~~component of a video signal~~ to provide a low pass filtered low brightness signal; ~~and,~~

slew rate limiting ~~only a second lower brightness level signal component of said video signal having~~ said low pass filtered low brightness signal ~~component,~~; and

~~said~~ providing an output video signal ~~having~~ including said low pass filtered ~~and said~~ slew rate limited signal ~~components~~ , said output video signal being less likely to result in sparkle artifacts in said imager.

Claim 2. (currently amended) The method of claim 1 wherein said decomposing step provides a first high brightness signal according to said first threshold, the method comprising the steps of~~:~~

~~decomposing said video signal into said first lower brightness level signal component and a higher brightness level signal component prior to said low pass filtering; and,~~

combining said low pass filtered first low~~er~~ brightness ~~level~~ signal ~~component~~ and said higher brightness ~~level~~ signal ~~component~~ prior to said slew rate limiting.

Claim 3. (currently amended) The method of claim 2~~,~~ comprising the step of delay matching said first higher brightness ~~level~~ signal ~~component~~ with said low pass filtered lower ~~first~~ brightness ~~level~~ signal ~~component~~ prior to said combining step.

Claim 4. (currently amended) The method of claim 2 ~~1,~~ comprising the steps of:

decomposing said ~~video~~ combined signal ~~having said low pass filtered first lower brightness level signal component~~ into ~~said~~ a second lower brightness ~~level~~ signal ~~component~~ and a higher brightness ~~level~~ signal ~~component~~ according to a second threshold prior to said slew rate limiting; ~~and,~~

applying said slew rate limiting step to said second low brightness signal; and,

combining said slew rate limited second lower brightness ~~level~~ signal ~~component~~ and said second higher brightness ~~level~~ signal ~~component~~ to generate said output video signal ~~having said low pass filtered and said slew rate limited signal components~~.

Claim 5. (currently amended) The method of claim 4~~,~~ comprising the step of delay matching said second higher brightness level signal component with said slew rate limited lower brightness level signal component prior to said combining step.

Claim 6. Cancelled.

Claim 7. (currently amended) The method of claim 6~~,~~ comprising the step of supplying said output video signal having said low pass filtered and said slew rate limited signal components to a liquid crystal on silicon imager.

Claim 8. (currently amended) The method of claim 1~~,~~ comprising the steps of:

applying said sparkle reducing steps to an input video signal comprising a luminance signal for said a picture;

delaying chrominance signals for said picture; and,

generating a plurality of video drive signals from said modified processed luminance signal and said delayed chrominance signals.

Claim 9. (currently amended) The method of claim 8~~,~~ comprising the steps of:

applying said sparkle reducing steps to further process at least one of said video drive signals; and,

delaying all non-sparkle-reduced video drive signals.

Claim 10. (currently amended) The method of claim 1~~,~~ comprising the steps of:

generating a plurality of video drive signals from luminance and chrominance signals;

applying said sparkle reducing steps to at least one of said video drive signals; and,

delaying ~~all~~ non-sparkle-reduced video drive signals.

Claim 11. (currently amended) The method of claim 4 ~~1~~, comprising the steps of:

selecting ~~different brightness thresholds for~~ said first and second ~~lower brightness level signal components~~ thresholds in accordance with transitions ~~between lower and higher level gain portions~~ of a gamma table associated with said LCOS imager; and,

selecting slew rate limits in accordance with the gain of said gamma table.

Claim 12. (currently amended) An apparatus for reducing sparkle artifacts due to non linearity in a transfer function of a liquid crystal imager~~,~~ comprising:

means for decomposing an input video signal according to a first threshold to provide a first low brightness signal;

means for low pass filtering ~~only a~~ said first lower brightness ~~level~~ signal to provide a low pass filtered low brightness signal ~~component of a video signal~~; ~~and,~~

means for slew rate limiting ~~only a second~~ said low pass filtered lower brightness ~~level~~ signal ~~component of said video signal having said low pass filtered signal component,~~ ; and

means for providing an output ~~said~~ video signal ~~having~~ including said low pass filtered ~~and said~~ slew rate limited signal ~~components being less likely~~ to ~~result in sparkle artifacts in~~ said imager.

Claim 13 (currently amended). The apparatus of claim 12~~,~~ wherein said decomposer provides ~~comprising:~~

~~means for decomposing said video signal into said first lower brightness level signal component and~~ a first higher brightness ~~level~~ signal in accordance with said first threshold, said apparatus comprising ~~component prior to said low pass filtering~~;

first means for combining said low pass filtered ~~first~~ lower brightness ~~level~~ signal ~~component~~ and said first higher brightness ~~level~~ signal ~~component~~ prior to said slew rate limiting;

means for dividing said ~~video~~ combined signal ~~having said low pass filtered first lower brightness level signal component~~ into ~~said~~ a second lower brightness ~~level~~ signal ~~component~~ and a second higher brightness ~~level~~ signal ~~component~~ prior to said slew rate limiting; and,

second means for combining said slew rate limited second lower brightness ~~level~~ signal ~~component~~ and said second higher brightness ~~level~~ signal ~~component~~ to

generate said output video signal ~~having said low pass filtered and said slew rate limited signal components~~.

Claim 14. (Currently amended) The apparatus of claim 13~~,~~ comprising:

means for delay matching said first high~~er~~ brightness ~~level~~ signal ~~component~~ with said low pass filtered ~~first~~ lower brightness ~~level~~ signal ~~component prior to said first-recited combining step~~; and,

means for delay matching said second high~~er~~ brightness ~~level~~ signal ~~component~~ with said slew rate limited second lower brightness level signal ~~component prior to said second-recited combining step~~.

Claim 15. (Currently amended) The apparatus of claim 12~~,~~ wherein a picture to be displayed on said imager includes luminance signals comprising said input signal and chrominance signals, the apparatus comprising:

means for delaying said chrominance signals for said picture; and,

means for generating a plurality of video drive signals based upon said output video signal ~~from a luminance signal having said low pass filtered and said slew rate limited signal components~~ and said delayed chrominance signals.

Claim 16. (currently amended) The apparatus of claim 12~~,~~ wherein:

~~different brightness thresholds for~~ said first and second thresholds ~~lower brightness level signal components~~ are selectable in accordance with transitions

between lower and higher level gain portions of a gamma table associated with said imager; and,

slew rate limits are selectable in accordance with the gain of said gamma table.

Claim 17. (currently amended) The apparatus of claim 12~~,~~ wherein said means for low pass filtering has a normalized 1:2:1 Z-transform frequency characteristic.

Claim 18. (currently amended) The apparatus of claim 12~~,~~ wherein said imager ~~is~~ comprises a liquid crystal on silicon imager.

Claim 19 (currently amended). An apparatus for reducing sparkle artifacts due to non linearity in a transfer function of a liquid crystal imager~~,~~ comprising:

a decomposer for providing a first low brightness signal in accordance with a first threshold;

a low pass filter for ~~processing only a~~ filtering said first lower brightness ~~level~~ signal ~~component of a video signal~~ to provide a filtered low brightness signal; and,

a slew rate limiter for processing ~~only a second lower brightness level signal component of said video signal having~~ said ~~low pass~~ filtered low brightness signal ~~component, said~~ to provide an output video signal ~~having said low pass filtered and said slew rate limited signal components being~~ less likely to result in sparkle artifacts in said imager.

Claim 20. (currently amended) The apparatus of claim 19~~, comprising:~~ wherein said

~~a~~ first decomposer ~~for dividing said video signal into said first lower brightness level signal component and~~ provides a first high~~er~~ brightness ~~level~~ signal ~~component prior to said low pass filter processing~~ according to said first threshold said apparatus comprising: ~~;~~

a first algebraic unit for combining said low pass filtered ~~first~~ low~~er~~ brightness ~~level~~ signal ~~component~~ and said first high~~er~~ brightness ~~level~~ signal ~~component~~ prior to processing by said slew rate limiter ~~processing~~;

a second decomposer for dividing said ~~video~~ combined signals in accordance with a second threshold ~~having said low pass filtered first lower brightness level signal component~~ into ~~said~~ a second low~~er~~ brightness ~~level~~ signal ~~component~~ and a second high~~er~~ brightness ~~level~~ signal ~~component after said combining and~~ prior to processing by said slew rate limiter ~~processing~~; and,

a second algebraic unit for combining said slew rate limited second low~~er~~ brightness ~~level~~ signal ~~component~~ and said second high~~er~~ brightness ~~level~~ signal ~~component~~ to generate said output video signal ~~having said low pass filtered and said slew rate limited signal components~~.

Claim 21. (currently amended) The apparatus of claim 20~~, comprising~~:

a first delay match circuit for delaying said first high~~er~~ brightness ~~level~~ signal ~~component~~ prior to said combining with said low pass filtered first low~~er~~ brightness ~~level~~ signal ~~component~~; and,

a second delay match circuit for delaying said second higher brightness level signal component prior to said combining with said slew rate limited second lower brightness level signal component.

Claim 22. (currently amended) The apparatus of claim 21, wherein a picture to be displayed on said imager comprises a luminance and chrominance signal and said input signal comprises said luminance signal, the apparatus comprising:

a delay matching circuit for delaying chrominance signals for said picture; and,

a color space converter for generating a plurality of video drive signals from a luminance signal having said low pass filtered and said slew rate limited signal components based upon said output signal and said delayed chrominance signals.

Claim 23. (currently amended) The apparatus of claim 19, wherein different said first and second brightness thresholds for said first and second lower brightness level signal components are selectable in accordance with transitions between relatively lower and higher level gain portions of a gamma table associated with said imager, and, slew rate limits are selectable in accordance the gain of said gamma table.

Claim 24. (currently amended) The apparatus of claim 21, wherein said low pass filter has a normalized 1:2:1 Z-transform frequency characteristic.

Claim 25. (currently amended) The apparatus of claim 21, wherein said imager ~~is~~ comprises a liquid crystal on silicon imager.

Allowable Subject Matter

Claims 1-5 and 7-25 are allowed.

REASONS FOR ALLAWANCE

The following is an examiner's statement of reasons for allowance:

After the above amendment, all the independent claims are allowed, because none of the cited references either singularly or in combination teach or fairly suggest an apparatus and a method for reducing sparkle artifacts that include among other features, decomposing an input video signal according to a first threshold to provide low brightness signal, low pass filtering the low brightness signal, and slew rate limiting the low pass filtered signal. The slew rate limiting step or means entails that the Slew rate limiter assures that successive output signals from the slew rate limiter will not vary by more than the predetermined slew rate (as described in Applicant' specification).

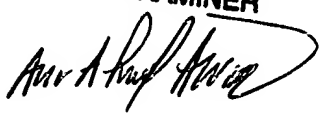
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amr Awad whose telephone number is (571) 272-7764. The examiner can normally be reached on Monday through Fridary from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkwitz can be reached on (571)272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMR A. AWAD
PRIMARY EXAMINER



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A. A.